



# **Engineer Master Plan Effort**

**Mike Boyd**

# The Few, the Proud



We live in interesting Times!



# Agenda

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- Personnel Status
- Change
- JOEB
- OIF Activities
- Experimentation
- Engineer Master Plan Mandate
- Expectations



# Combat Engineer IZ Promotion Rate

FY	STATS	COL	LTCOL	MAJ
FY01	IZ/SEL/AVG		12 / 9 / 75%	14 / 13 / 92.9%
	BD AVG		64.30%	90.00%
FY02	IZ/SEL/AVG		10 / 5 / 50%	21 / 20 / 95.2%
	BD AVG		65.70%	90.00%
FY03	IZ/SEL/AVG	3 / 1 / 33.3%	22 / 15 / 68.2%	26 / 25 / 96.2%
	BD AVG	56.30%	68.30%	88.70%
FY04	IZ/SEL/AVG	5 / 3 / 60.0%	14 / 7 / 50%	19 / 17 89.3%
	BD AVG	51.20%	64.70%	87.00%
FY05	IZ/SEL/AVG	6 / 3 / 50.0%	6 / 5 / 83.3%	17 / 14 / 82.4%
	BD AVG	50.40%	61.80%	85.20%
FY06	IZ/SEL/AVG	8 / 4 / 50.0%	18 / 14 / 77.77%	16 / 15 / 93.8%
	BD AVG	50.80%	67.20%	86.70%



# Engineer Stars



**MajGen Select  
Michael Lehnert**



**BGen Frank Panter**

**BGen Select  
John Wissler**

**Col Pete Verchruysse - ACMC EA**

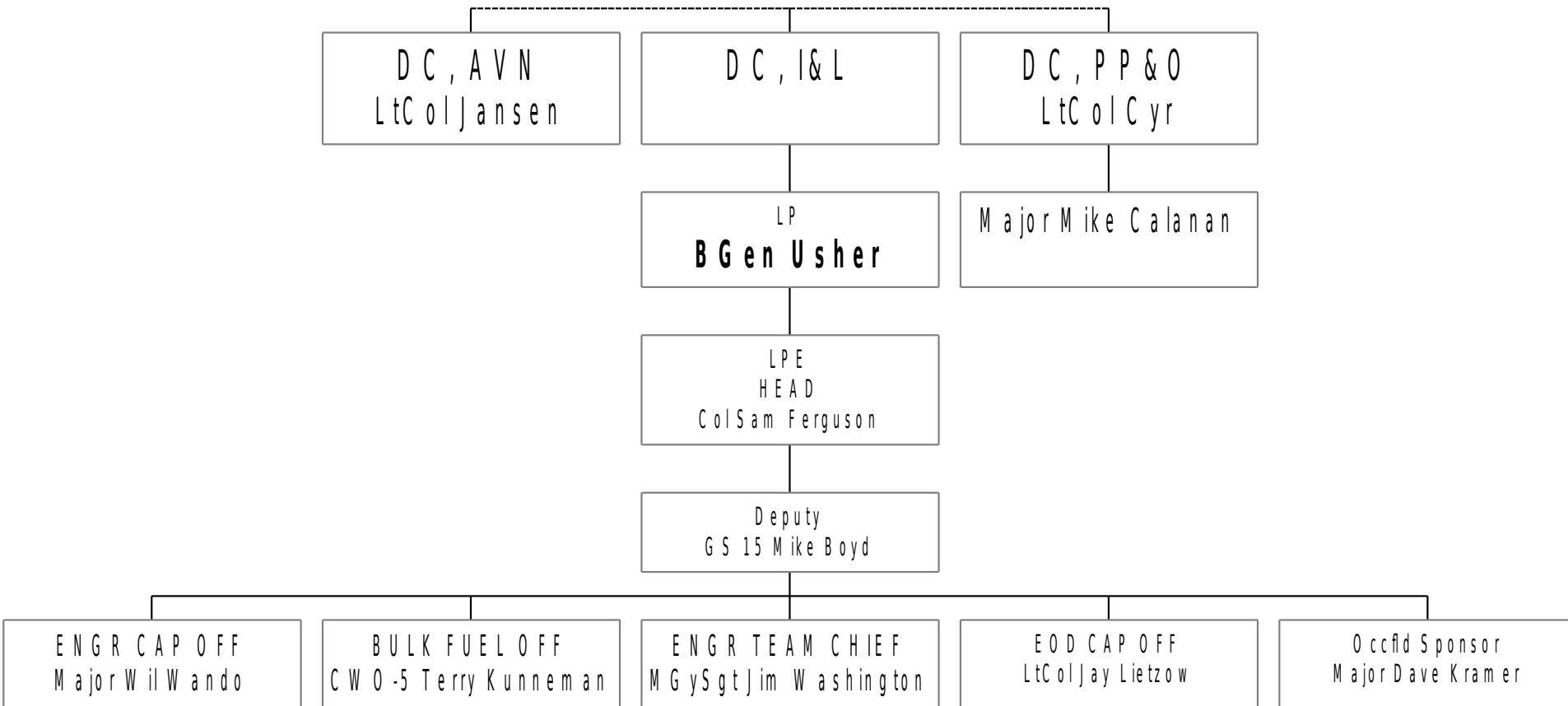
**Col Rod Sansone**

**- I&L Resource Sponsor**

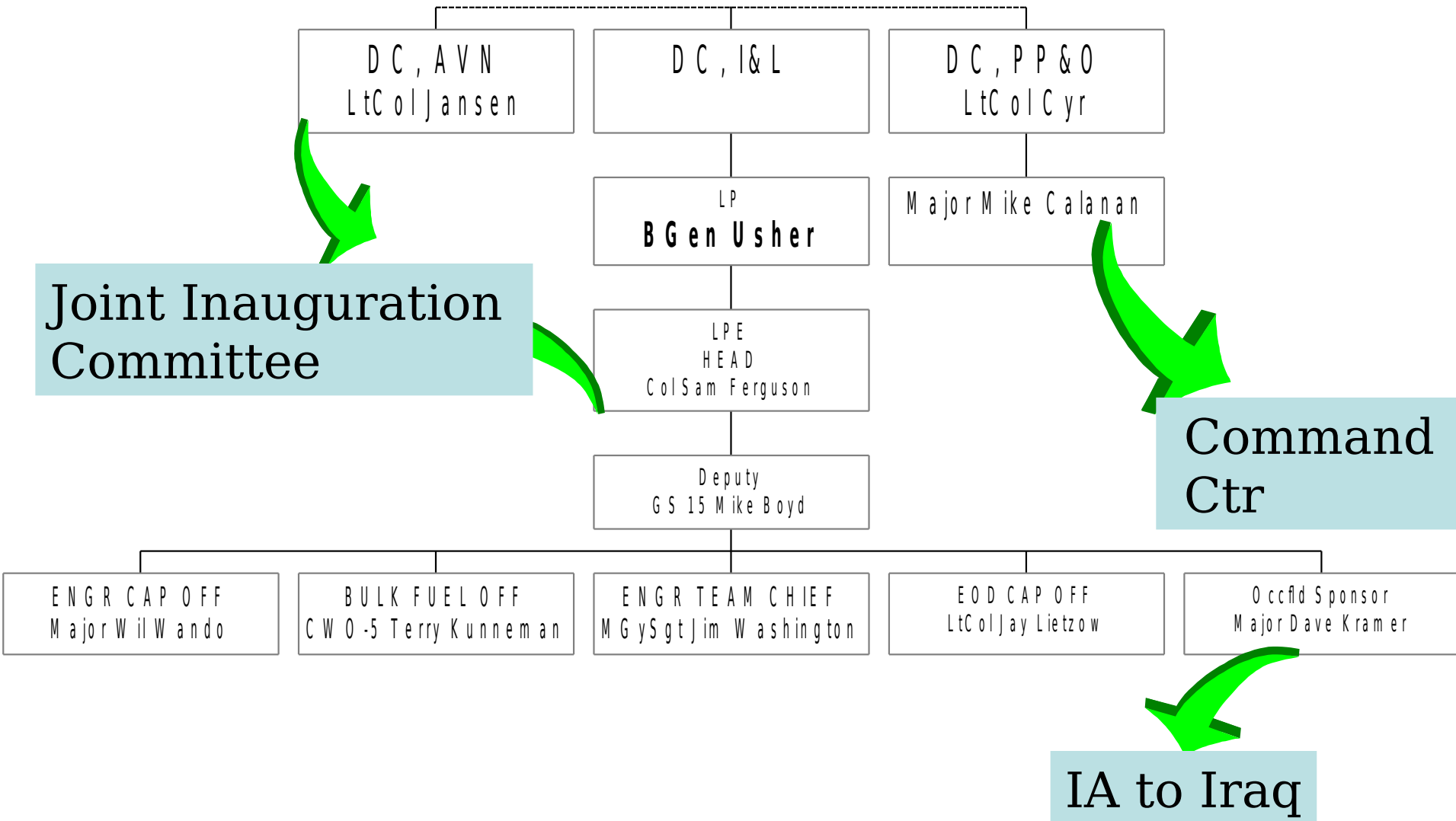
**Col Jon Hull**

**- Logistics Modernization Tra  
Task Force Head**

# Engineer Staffing at HQ



# Just when we thought it was safe







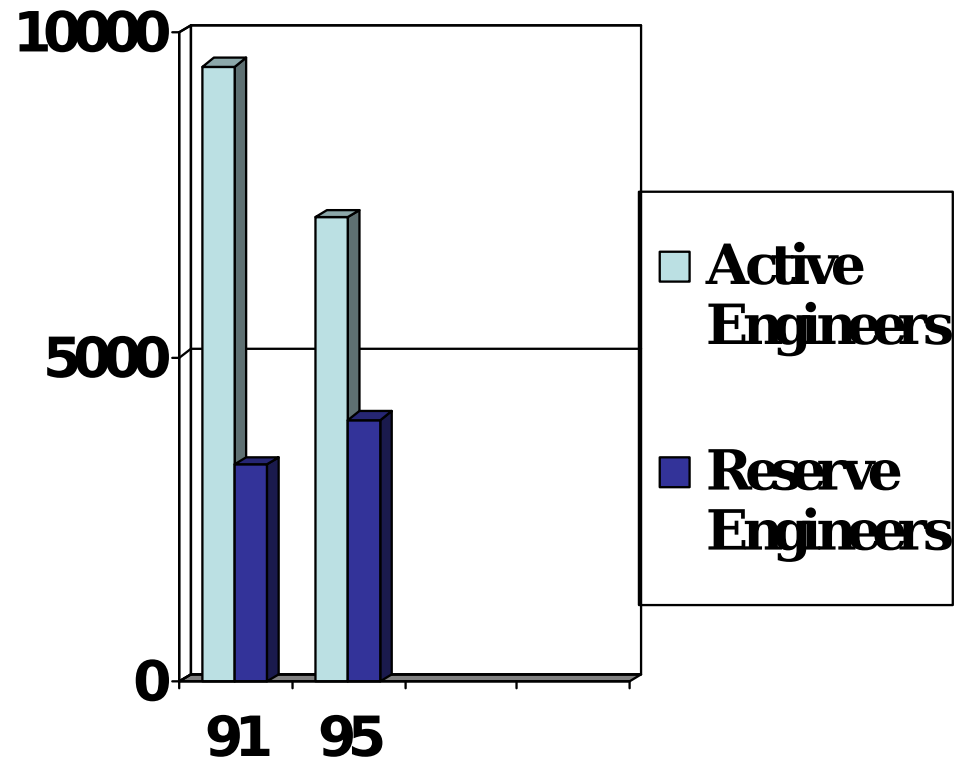
# Change

- A History of HQ Driven Change
  - Peace Dividend 1991-95
  - FSPG 99
  - Engineer Equipment OAG 20
  - MWSS Rightsizing 2002
  - FSRG 2004
  - Front End Analysis PR07
  - MCERG
  - FSRG 05?





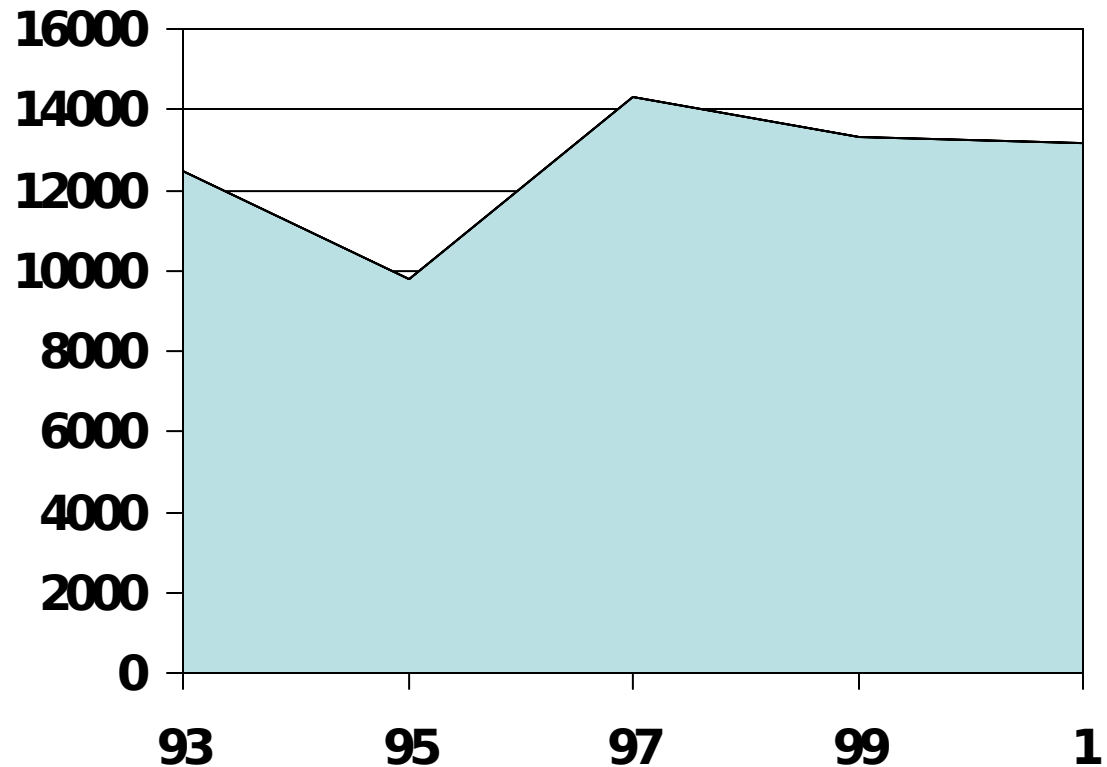
- **USMC overall reductions from 195-172K (12%)**
- **Active Engineers Reduced 29%**
  - CSC and 9<sup>th</sup> ESB in Okinawa
  - Two Bridge Co
  - Three BF Co
- **Reserve Plus-ups**
  - One Bridge Co
  - Two BF Co





# Major Engineer Principal End Items (PEIs)

- Fluctuations
  - Growth of MEP/ECU
  - Minor reductions of Construction/MHE



Lost operators and maintainers,  
increased equipment



# Engr Equip OAG 2001

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- Brought on by Marfor/MEF Cdrs stating too much Engineer Equip
- Held at Cp Lejeune over 9/10-12, 2001
- Reduced DMFA and ORF Qtys to 0



# 2002 MWSS Migration (FSPG Holdover)

CMC Proposal: Migrate MWSS's to FSSG

MWSG Mitigation Strategy: Rightsize

SPECIALTY	SAVINGS	TOTAL
GENERAL ENGINEERING		<b>245</b>
• UTILITIES	145	
• HE/MHE OP & MECH	40	
• CONSTRUCTION	60	

<sup>1</sup>Reflects total savings yielded from all **ten** active duty MWSSs



# Force Structure Review Group (FSRG) 2004 Background

## ACMC Guidance

- 5 Apr – 9 May 04 (Briefed CMC on 9 May)
- 22 June 2004 (CMC briefed Senior Leadership)
- **Membership:**
  - **DC, CD (Co-Chair)** – Col Herrmann
  - **DC, M&RA (Co-Chair)** – Col Applegate
  - **DC, PP&O** – Col Lockard
  - **DC, P&R** – Col Brilakis
  - **DC, I&L** – Col Peters
  - **DC, AVN** – LtCol Spruill
  - **DC, INTEL** – LtCol Kucala
  - **C4** – Col Hoey
  - **MFP** – Col February
  - **MFL** – Col Griffith
  - **MFR** – Col Sward/Col Pfahler
- “...necessary for USM to meet required operational and support capabilities against the backdrop of a rapidly changing world environment accented by asymmetrical warfare and the continuing Global War on Terrorism.”
- “...Marine Corps structure and end strength will remain at current levels.”
- “...supporting establishment agencies and personnel must be structured to support the war fighters...”
- “...maintain the provisions of Title X USC Section 5042...and 5063.”
- “Current MAGTF concepts of employment, organization, and doctrine must be supported in the near term.”



# FSRG Efforts and Results

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- PP&O -Recommended Eliminate CEB Engr Spt Cos - 10/418
- I&L Mitigation Strategy - reduce by (2/86)
  - Reduce MHE
  - Migrate MEP to Div HQBn and some MHE and utilities to ESB
- Deleted Fabric Repairmen (MOS 1181) (135)
  - 100 Active Duty /35 Reservists
  - Shift to Bases and Stations
- Reduced MWSS Reserves (98)
- Increased EOD 24/145

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# Warfighting Front End Analysis (FEA) for PR07 *Quicklook* Report

14 February 2005

**Genesis - PBD 753**

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# 21<sup>st</sup> Century Marine Corps Vision

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***We are the Nation's premier expeditionary combat force-in-readiness. By nature, we are primarily a Naval force whose strength is sustainable forcible-entry. We fight effectively across the spectrum of conflict, and know that our future will be dominated by irregular wars. We typically project our forces from the sea, however, we possess the capability to operate at long distances and for extended periods of time as part of the Joint Force. We are forward deployed throughout the world, both on land and at sea.***

***We focus on war fighting excellence in everything we do. We fight and operate as combined-arms teams, seamlessly integrating our ground and aviation forces with adaptive logistics. The integrity of these combined-arms teams is a guiding principle of our Corps. In employing our forces, we exploit the speed, flexibility and agility inherent in our combined-arms approach.***

***Most importantly, we train and educate our Marines to think independently and act aggressively, with speed and initiative, and to exploit the advantages of cultural understanding. We are risk-takers who thrive in chaotic, unstable, and unpredictable environments. Our creed that every Marine is a rifleman and warrior at heart is the key to both our past and to our future. We take care of each other both on and off the battlefield, and know and believe that "Once a Marine, Always a Marine."***

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# CMC FEA Guidance (1)

Approved 11 Jan 05

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- **Preserve core competencies as articulated in the 21<sup>st</sup> Century Marine Corps Vision:**
    - ...combined-arms teams...*
    - ...a naval force whose strength is sustainable forcible entry.*
    - ...premier expeditionary combined arms force-in-readiness.*
    - ...project our forces from the sea...*
    - ...war fighting excellence...*
    - ...operate at long distances and for extended periods of time as part of the Joint Force.*
    - ...seamlessly integrating our ground and aviation forces with adaptive logistics.*
  - **Enhance:**
    - Irregular warfare capabilities
    - Urban warfare capabilities
    - Training for counter-terrorism, counterinsurgency, FID
    - Capability to deal with WMD
    - Global, seabased forcible entry capabilities
  - **Develop scalable and additive distributed ops capability**
  - **Divest from capabilities that don't support the vision**
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# CMC FEA Guidance (2)

Approved 11 Jan 05

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- **Meet Regional Combatant Commanders (RCC) requirements, while taking risk in capabilities of marginal value.**
  - **Focus the FEA on green programs; consider Blue In Support of Green (BISOG) and joint.**
  - **Use the emerging QDR strategic problems to guide the FEA.**
    - **Focus on overseas, expeditionary capabilities**
    - **Outcome of the FEA will inform PR-07, other FEAs, and the Marine Corps participation in the QDR.**
  - **Increase relevance to the RCCs.**
  - **Provide a sustainable, expeditionary, sea-based, forcible entry force in readiness.**
  - **There are no “sacred cows.”**
  - **FSRG guides but does not constrain the FEA.**
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# Essential Tasks

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## **Address all 12 Capability Tasks derived from 21<sup>st</sup> Century Marine Corps Vision, CMC Intent, and CMC Initial FEA Guidance.**

- 1. Provide forces to win the Global War on Terror.**
- 2. Preserve the core competencies articulated in, and be guided by, our 21st Century Marine Corps Vision- including Marine Air-Ground Task Forces; and our expeditionary culture that enables us to always be "First to Fight."**
- 3. Produce and equip a 21st Century Marine who is imbued with an aggressive warrior ethos and armed with the skills and modern capabilities that will enable him to prevail against both traditional and non-traditional foes.**
- 4. Enhance our training capability to build counterinsurgency, counterterrorism, and internal defense of partner countries.**
- 5. Enhance irregular warfare capabilities including language capabilities, cultural understanding, stability, and counter-insurgency operations.**
- 6. Enhance our ability to conduct urban warfare against traditional and irregular enemies.**
- 7. Enhance our global, seabased, forcible entry capability by developing the ability to rapidly employ a Marine Expeditionary Brigade capable of sustainable forcible entry operations.**
- 8. Modernize our logistics force and implement transformational "sense and respond" capabilities.**
- 9. Enhance our ability to deploy / employ forces capable of dealing with WMD.**
- 10. Develop a scalable and additive distributed operations capability.**
- 11. Divest from capabilities that don't support the vision.**
- 12. Increase relevance to the RCCs, while taking risk in capabilities of marginal value.**

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# Marine Corps Core Competencies

Vision 21 Group (Fall 1995)	MCS 21 (Nov 2000)	EMW (Sept 2001)	MCDP 1-0 (Nov 2001)	MC Vision Brief
Combined Arms Operations	Combined Arms Operations	Combined Arms Integration	Combined Arms Integration	<b>...combined-arms teams...</b>
Forcible Entry	Forcible Entry From the Sea	Forcible Entry From the Sea	Forcible Entry From the Sea	<b>...a naval force whose strength is sustainable forcible entry.</b>
Expeditionary Nature Expeditionary Operations	Expeditionary Culture	Expeditionary Forward Operations	Expeditionary Forward Operations	<b>...premier expeditionary combined arms force-in-readiness.</b>
Naval in Character	Naval in Character	Sustainable, Interoperable, Littoral Power Projection	Sustainable, Littoral Power Projection	<b>...project our forces from the sea...</b>
	Ready to Fight and Win	Warfighting Culture and Dynamic Decision Making	Warfighting Culture and Dynamic Decision Making	<b>...war fighting excellence...</b>
	Joint Competency			<b>...operate at long distances and for extended periods of time as part of the Joint Force.</b>
	Task Organized			<b>...seamlessly integrating our ground and aviation forces with adaptive logistics.</b>
Reserve Integration	Reserve Integration Expertise			<b>21</b>



# Mission Statement

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- **Original:**
  - **During 4 Jan - 11 Feb - 2005, DC, CD conducts a front end assessment (FEA) in order to provide an analytical framework that supports Marine Corps participation in Program Review 07.**
- **Proposed Revision:**
  - **NLT 28 Feb, DC, CD provides CMC a front end assessment that includes Service / Joint capability options addressing future security challenges IOT support Program Review 2007 and the Marine Corps participation in the Quadrennial Defense Review.**



# COA Wargame Process

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- **Refined COA 3 - major shift within the realm of the possible**
  - Developed details re: specific recommendations
  - Addressed “capacity” issues
  - Prioritized capability enhancements
  - Performed rough DOTMLPF assessment
- **Identified investment reduction candidates**
  - BISOG and Joint: problematic
- **Mapped capabilities to QDR TOR**
- **Harvested senior mentor insights**



# Capability Enhancement Areas

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## 1. Enhance:

1. Ability to interact with indigenous populations.
2. communications capability at battalion and below.
3. proficiency of small units.
4. tactical intelligence capabilities.
5. force protection against irregular threats.
6. ability to operate in an urban environment.
7. tactical mobility.
8. ability to command and control the networked force.
9. Precision Fires.
10. Ability to participate in the location, identification and rendering safe WMD.

## 2. Provide adaptive logistics.





# Selected Capability Enhancements (1 of 4)

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## **1. Enhance ability to interact with indigenous populations:**

- a. Individual language/cultural training: MTTs, Distance Learning, civilian institutions
- b. Align linguists/cultural SMEs w/unit missions: assignment policies
- c. Cultural SME "reachback": MCIA, et al

## **2. Enhance communications capability at the battalion and below:**

- a. Small unit comm: Integrated Intra-Squad Radio, CONDOR, D.O. comm suite
- b. Bn routing/switching gateway to MSC comm infrastructure: CONDOR
- c. Bn-level "Suitcase SATCOM": new start
- d. Reachback infrastructure: expand MCEITS to SIPRNET

## **3. Enhance proficiency of small units:**

- a. Small-unit leadership: assignment policies, focus TEEP on irregular, formal enlisted PME/certification for SNCO/NCO, "age the force" (>Top 6)
- b. Small-unit capabilities: increase manning, MERS, Bn/below digital comm
- c. Fire & Maneuver Ranges: Range Modernization Initiative, shift field firing POIs toward irregular
- d. CSS: Fund PORs -- Expeditionary Fuel System, Alternative Power Sources for Comm-Elect, LW H2O Purifier



# Selected Capability Enhancements (2 of 4)

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## 4. Enhance tactical intelligence capabilities:

- a. UAV: procure Tier II for inf regts
- b. Small unit sensors for urban and D.O.: SURSS plus-up, additional RDT&E
- c. TPCS-MPC plus up: additional SIGINT
- d. CIHEP plus-up: additional CI/HUMINT
- e. DS Intel Teams for D.O.: source from Intel Bn and RadBn

## 5. Enhance force protection against irregular threats:

- a. Training: Convoy Ops, MOUT Facilities upgrades, Urban Skills Trng upgrades
- b. Counter-IED: Joint MCM, Change Detection, RDT&E
- c. Stand-off Observation Capability: SURSS
- d. Vehicle Individual Protective Enhancements: EFV, M1A1, vehicle overpressure systems, enhanced SAPI, replace M9 w/M4
- e. MCCLL Data Mining: accessible USMC-wide

## 6. Enhance ability to operate in an urban environment :

- a. Training: Live-fire MOUT facilities, live-fire convoy trng facilities, MTTs, revise MOUT doctrine and training aids
- b. MCM/Counter-IED: tank blades, detection training, RDT&E for enhanced detection
- c. Comm: "urban canyon" comm: 64kbps Platoon BLOS comm



# Selected Capability Enhancements (3 of 4)

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## 7. Enhance tactical mobility:

- a. Protected Ground Mobility: tactical vehicle driver trng, new family of armored vehicles
- b. Convoy Ops: convoy/vehicle auto-tracking: CID/PLI equipment
- c. Transportation efficiency: Precision Air Delivery to small units, modularized distribution, autonomic logistics, revise convoy doctrine

## 8. Enhance C2 of the networked force:

- a. Integrated SA to Platoon-level: CLC2S injector to C2PC, integrate MAGTF C2 elements (UOC, CAC2S, GCSS-MC), ITV, full funding for BFSAs
- b. Collaborative environment for distributed decision-makers: RDT&E for "CP of the Future," determine collaboration standard
- c. Information Management: IMO structure at Div/Wing/FSSG and above, training and AMOS

## 9. Provide adaptive logistics:

- a. TAV for the MAGTF: In-Transit Visibility at platform/SECREP level, Autonomic Log, Scalable Class Supply Delivery System, Burn-Rate "sense and respond"
- b. CLC2S Functionality in MAGTF Software: CLC2S injector to C2PC
- c. MAGTF C2 Nodes to CSSEs: architecture standardization, use existing infrastructure



# Selected Capability Enhancements (4 of 4)

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## **10. Enhance precision fires :**

- a. Organic GCE fires: EFSS, FOTS, TLDHS, SABER, precision mortar munitions
- b. OAS (CAS): Joint Common Missile/HELLFIRE replacement
- c. Small unit control of precision fires: JTAC trng, TLDHS
- d. Range Modernization Initiative: accelerate current program (MILCON)

## **11. Enhance ability to participate in the location, identification and rendering safe WMD :**

- a. Identify new NBCD Trng/Equipment requirements: study
- b. WMD sensor package: integrate with USMC platforms (e.g., SURSS)
- c. WMD Intel DS Teams: at MEF CE



# "Quick Wins" (1/2)

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- **Organize**

- ETU
- Reenlistment incentives for linguists
- Man selected units at >100% (mitigate T2P2 impacts)
- WMD Intel DS Teams (analyze organization & capabilities)
- Increase foreign language proficiency pay for levels 1/1 through 3/3

- **Equip**

- Collapse multiple comm architectures (policy)
- Incorporate Log C2 into SIPRNET
- Standardize SATCOM capability for Bn/below
- Build CLC2S injector to C2PC
- Sniper System Capability Sets
- Accelerate CESAS buys to increase EW capability, specifically vs. IEDs



# “Quick Wins” (2/2)

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- **Train**

- “Cultural” Training MTT
- Contract with local civilian universities for cultural / language training
- Administer Defense Language Aptitude Test at MCRD
- Entry-level comm training
- ACE F/W AAW sorties converted to OAS (CAS) sorties
- NCO/SNCO School POIs focus on Irregular
- Basic intel collection individual training for all Marines
- Convoy Ops training, responsive to changing enemy tactics
- IED training, responsive to changing enemy tactics
- MCCLL Data Mining capability
- Fast-track revision of MOUT doctrine; apply lessons learned
- Fast track revision of Convoy doctrine; apply lessons learned
- Universal Controller/JTAC



# Potential Capacity Reductions

Program	Capability	Capacity	Remarks
<b>EFV</b>	Retain	Reduce	2 X MEB (plus ESGs)
<b>HIMARS</b>	Retain	Reduce	1 X Bn (Rein)
<b>LW-155</b>	Retain	Retain	Multi-task units
<b>EFSS</b>	Retain	Reduce	Seek improved solution in next increment
<b>M1A1 (FEP)</b>	Retain	Reduce	Principally traditional
<b>ABV</b>	Retain	Reduce	Cancel FY-07 procurement
<b>Line Charges</b>	Retain	Reduce	Principally traditional; some recent employment in OIF (MOUT)



# USMC Assault Breacher Vehicle



## DESCRIPTION

**ABV is a tracked, combat engineer vehicle designed to breach minefields and complex obstacles and provide in-stride breaching capability. ABV equipment includes a Full-Width Mine Plow, two Mk 155 Linear Demolition Charge Systems, a remote control system, and two lane marking systems. ABV will provide crew protection and vehicle survivability while having the speed and mobility to keep pace with the maneuver force.**

## PROGRAM STATUS

- **FY03 - MS B Approved**
- **FY04 - Fabricate 3 Prototypes**
- **FY05 - Operational Testing (Build 6)**
- **FY05 - MS C**
- **FY06 - IOC(build 16)**
- **FY07 - FOC (finish 11)**

## MILESTONE SCHEDULE

	FY02	FY03	FY04	FY05	FY06	FY07
SYSTEM INTEGRATION	■					
DEMONSTRATOR DELIVERED		◆				
DEVELOPMENTAL TESTING		■				
MILESTONE B APPROVED		◆				
FAB PROTOTYPES (3 )			■			
DT/LUE/OT&E			■	■		
MS C / FRP				◆	■	
IOC/FOC					◆	◆





# Potential Capacity Reductions

Program	Capability	Capacity	Remarks
<b>GBAD</b>	Retain	Reduce	Principally traditional
<b>CLAWS</b>	Retain	Reduce	Principally traditional
<b>CTN</b>	Retain	Under Review	Require C2, but not AAW
<b>CAC2S</b>	Retain	Under review	Require C2, but not AAW
<b>HELRASR</b>	Delay	Under review	Divert R&D to other enhancements. Risk in traditional.
<b>GATOR</b>	Retain	Reduce	33



# Next Steps

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- Near-Term
  - Transition
    - Interface between DC, CD and DC, P&R
    - Develop detailed recommendations
    - Submit FEA for CMC approval
  - DC, P&R assumes supported role 1 Mar 05
  - Inform other FEAs: Manpower, Readiness, Infrastructure, PB-06 Carry-over Issues, and Navy PR-07
- Mid-Term
  - Inform USMC QDR team
  - DC, CD supports DC, P&R in PR-07
  - Begin POM-08 FEA spring/summer 05
- Far-Term
  - Institutionalize FEA into EFDS



# CSSE Naming Convention Effort

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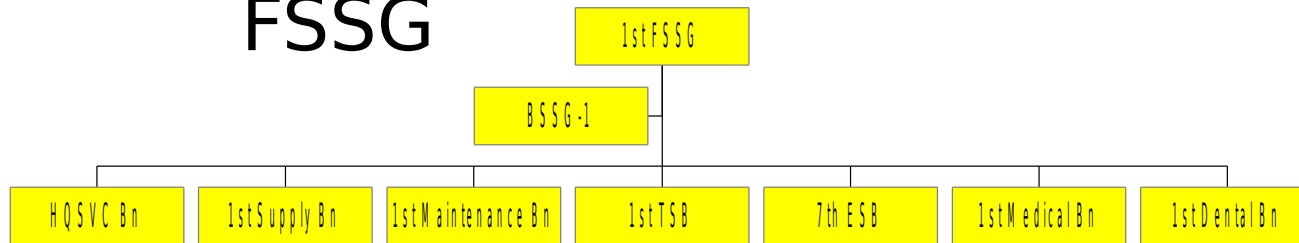
- DC, I&L asked in Spring 04
  - FSSG's provided warfighting template
  - Logistics Modernization TTF tasked to consolidate
  - CSSE Advocacy Board of 3 February 2005 accepted First FSSG EWT

# Why Change the Conventional FSSG?

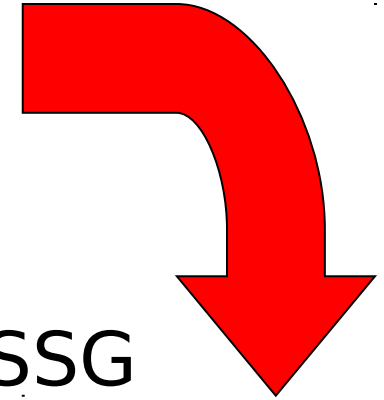


- Significant Challenges Experienced During Task Organization Development for OIF I Required Planning to Focus Inward (FSSG) vice Outward (Supported Units)
- Unlikely that we will Fight with Conventional Organization
  - Stovepiped Not Multi-Functional
- Every Contingency Requires Re-Organization of CSSE from Ground Up...No Standing Core
- Results in diminished unit cohesiveness, deficiencies in unit training
- Precludes MAGTF team building
- Does Not Clearly Delineate Responsibility within FSSG
  - Direct Support and General Support
  - Tactical and Operational

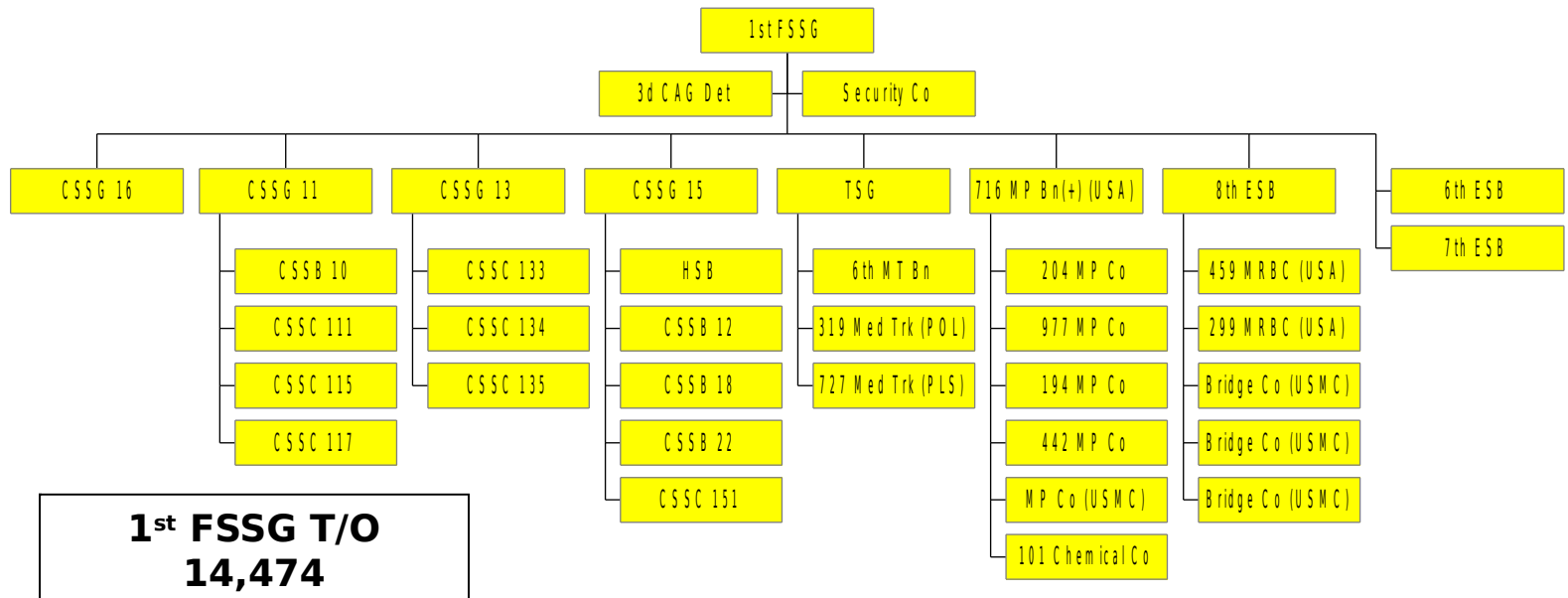
# The Conventional FSSG



Functionally stovepiped; not multifunctional CSS organizations



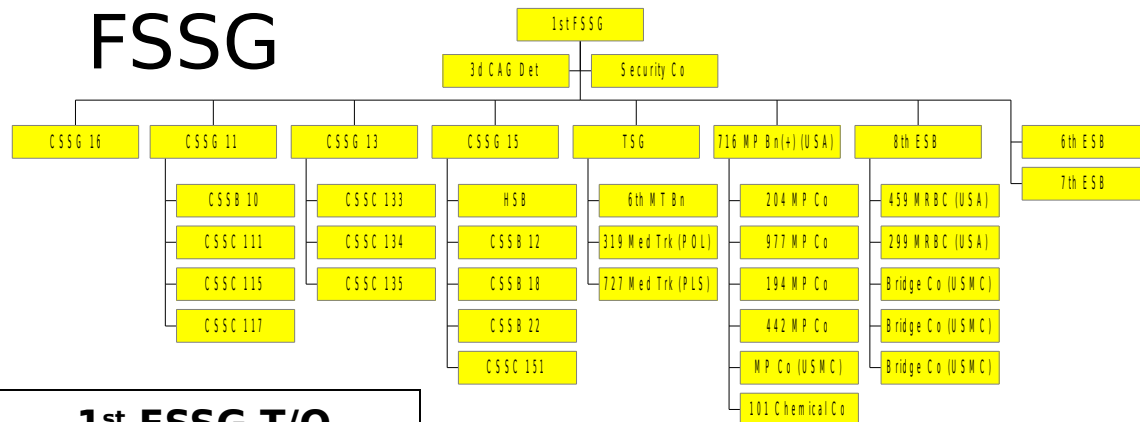
# The OIF Expeditionary FSSG



**1<sup>st</sup> FSSG T/O  
14,474**

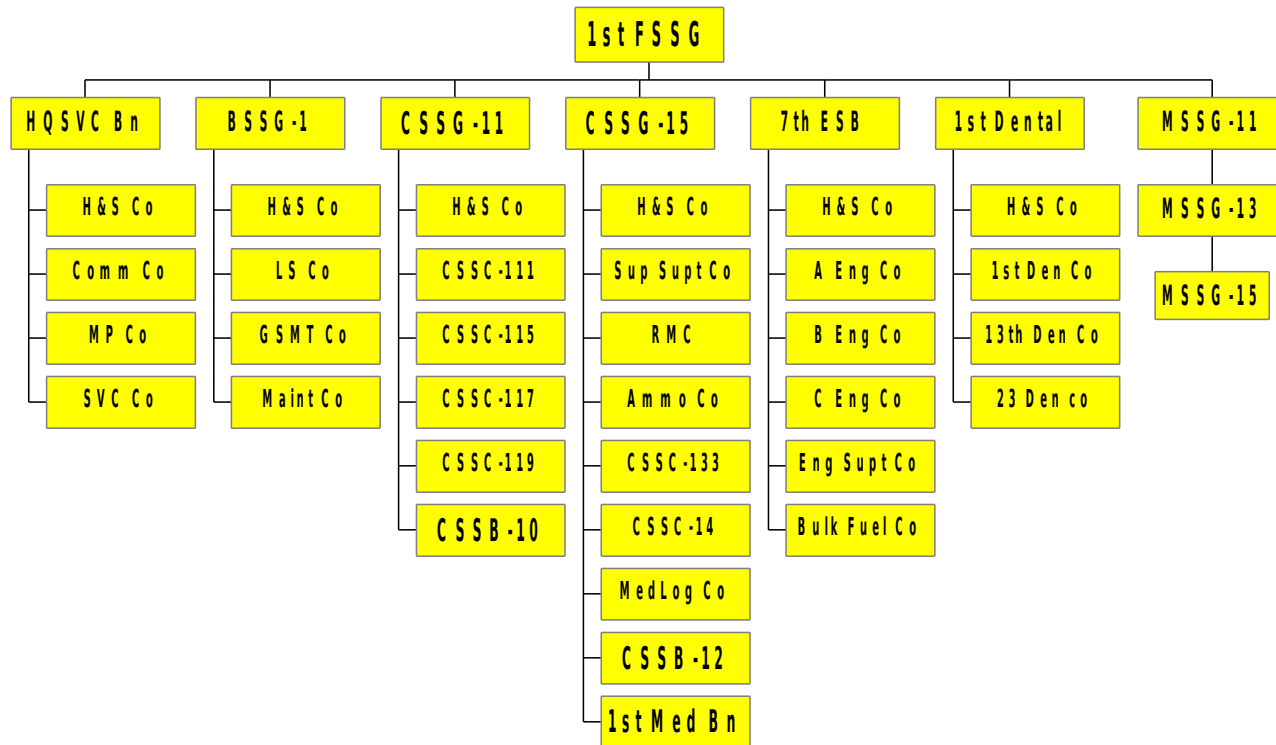
Maneuver DS CSS; Echelon GS capability forward

# The OIF Expeditionary FSSG

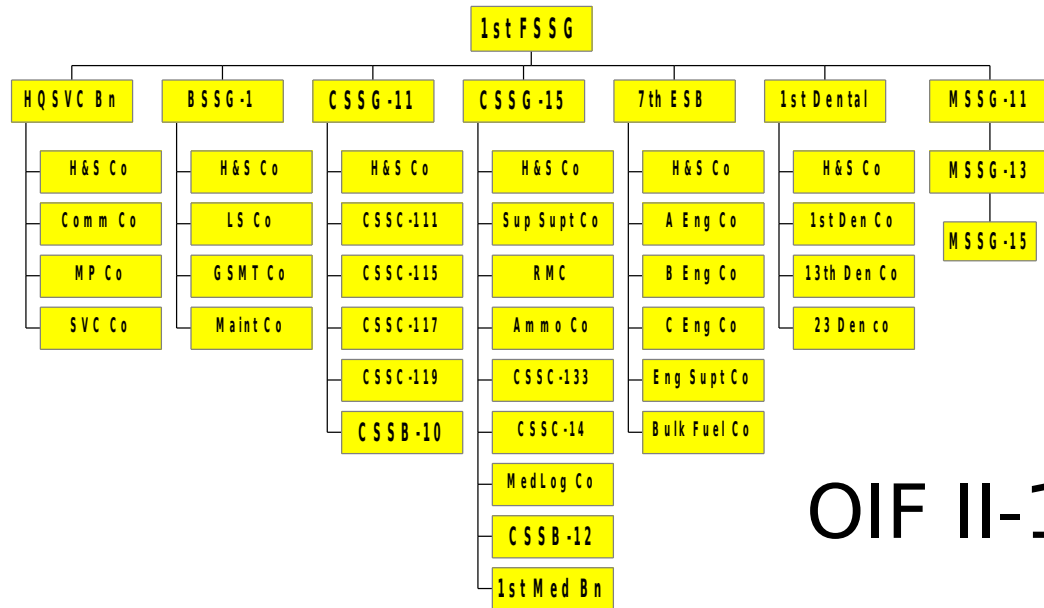


**1<sup>st</sup> FSSG T/O  
14,474**

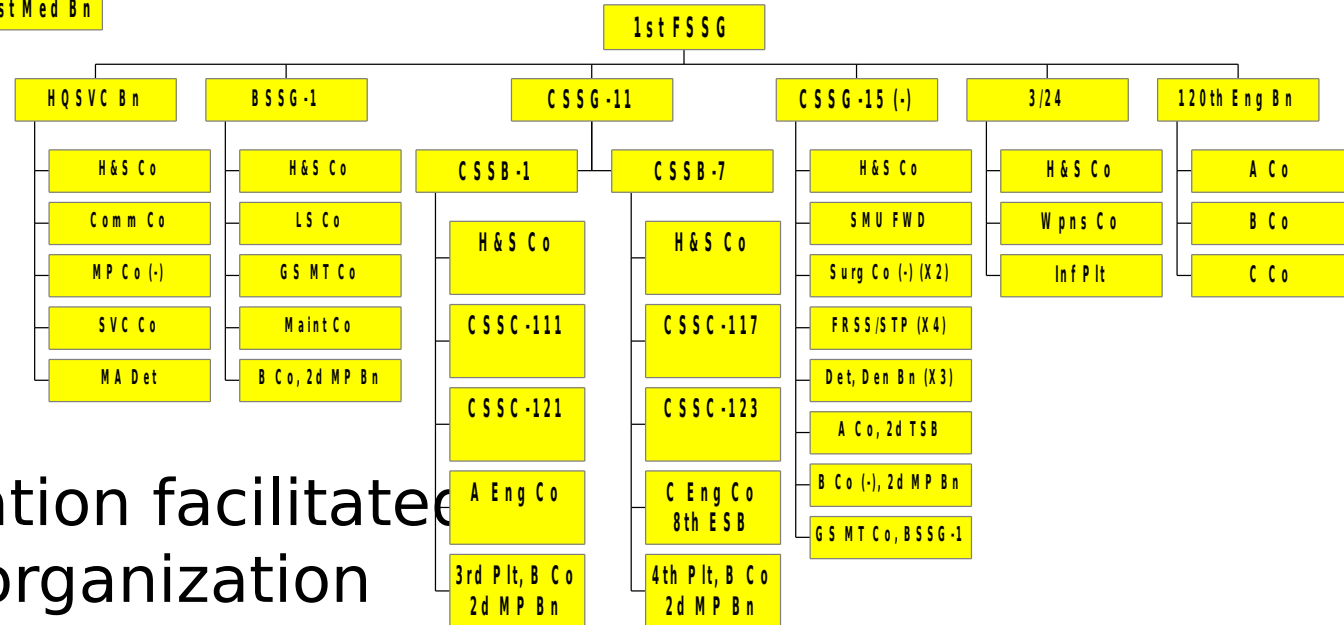
## POST OIF I EWT



# POST OIF I EWT

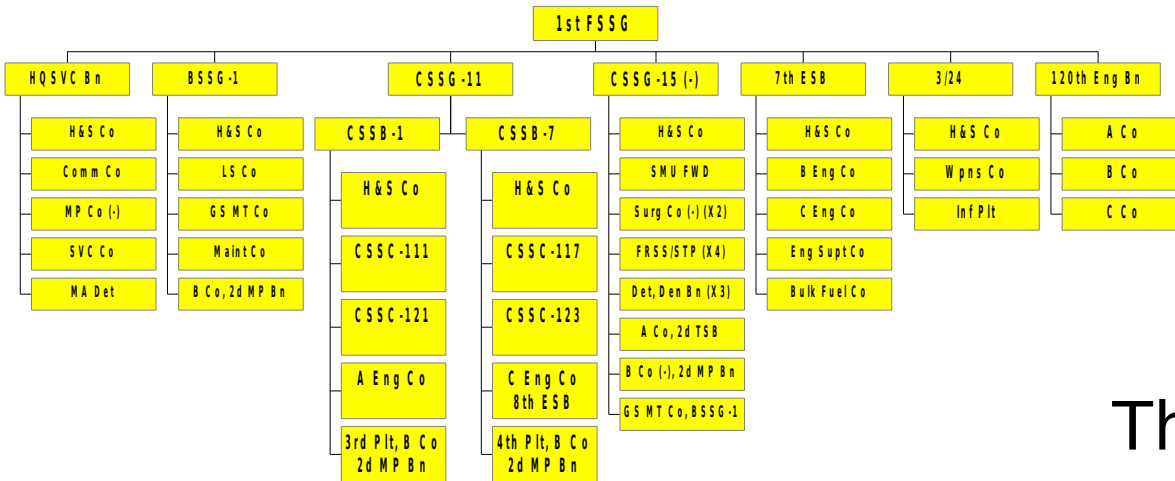


## OIF II-1 FSSG ORG

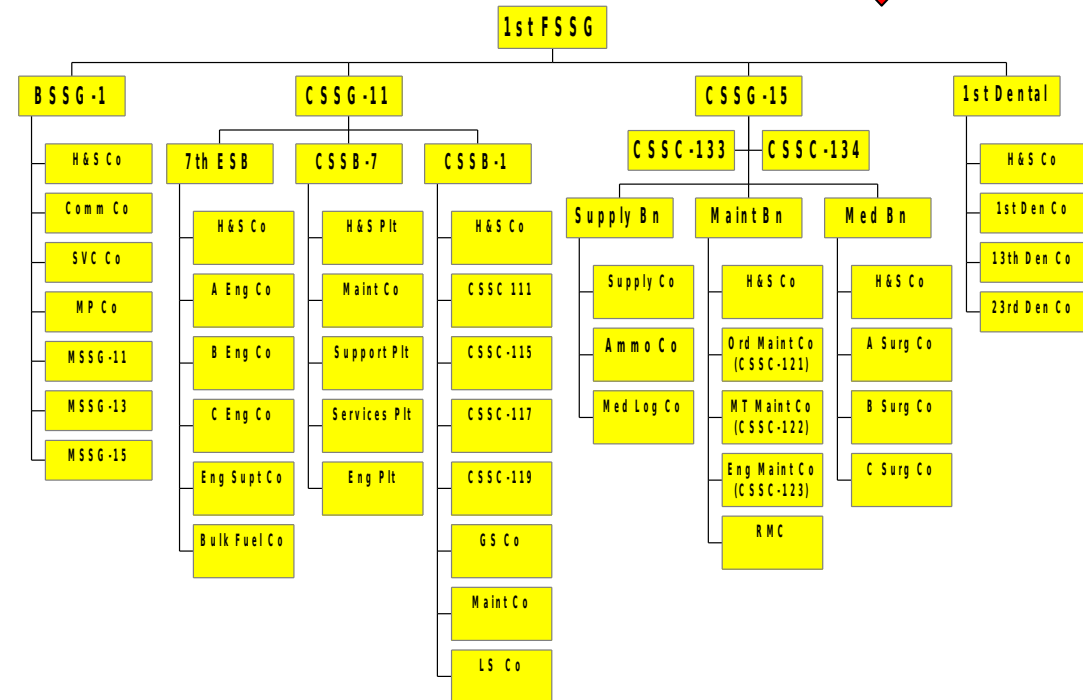


EWT organization facilitated  
OIF II-1 task organization

# OIF II-1 FSSG ORG



The EWT FSSG



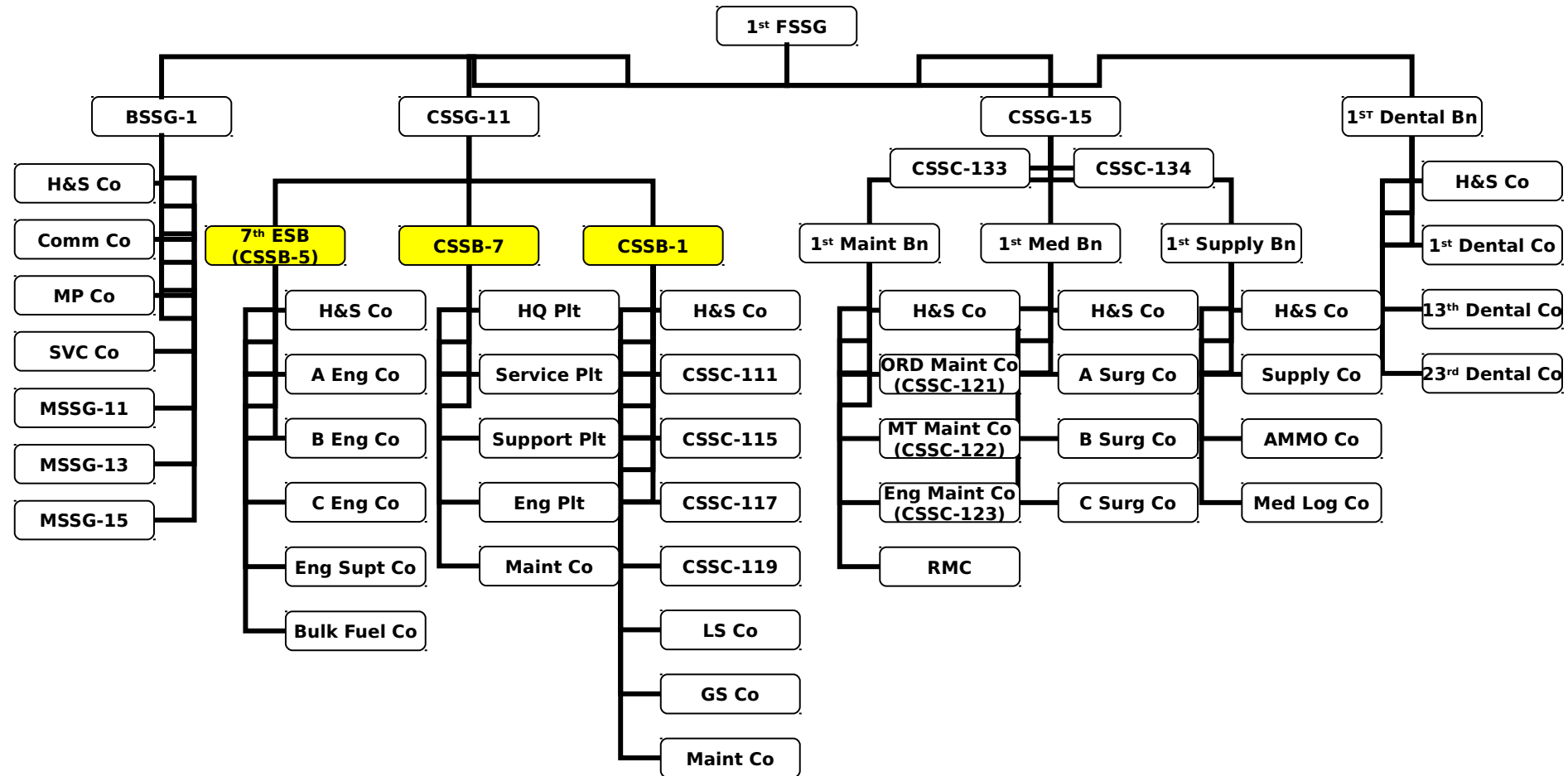




# 1<sup>st</sup> FSSG Organization

## Expeditionary Warfighting

### Template



CSB ISO each RCT



# Log Modernization Transition Task Force(TTP):

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- Provide reorganization/renaming/renumbering decision template to all FSSG Cmdrs for chop
  - FSSG Cmdrs return EWT for incorporation into MCERG Effort by 28 Feb
  - .
  - Develop standing briefing on reorganization decision template and disseminate to Operating Forces Leadership by 15 Mar.
  - FIRST FSSG submit final unit mission statements, T/O's and T/E's for EWT proof of concept by 15 Mar
  - Fully Develop FSSG Naming Convention Initiative by 2 May



# Marine Corps Equipment Review Group (MCERG)

- Total Force Structure (TFS) Hosted
  - Convenes 28 Feb 05
  - Work ICW the LM TTF and 1<sup>st</sup> FSSG in developing mission statements, T/Os, and T/E based on 1<sup>st</sup> FSSG's EWT
- Report back to ACMC by 31 July

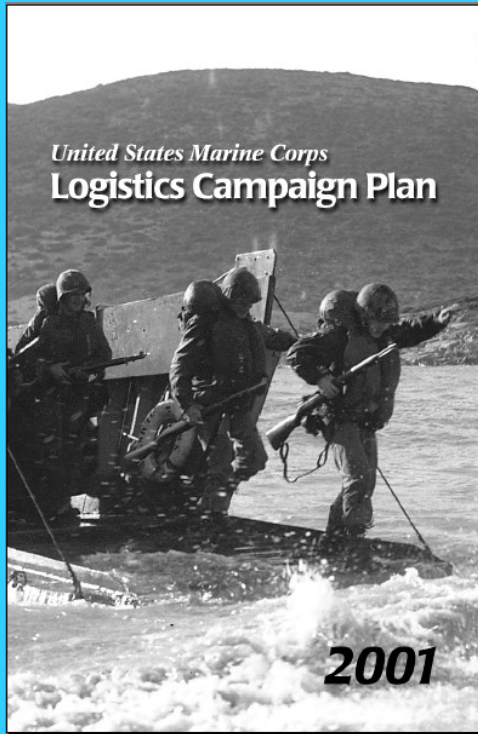


# Break?



# Naval Operating Concepts

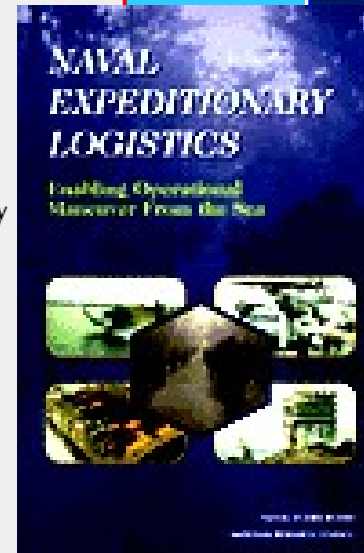
## Balancing the forces of the future



CRM D0003255.A2 / Final  
February 2001

## Fuel Requirements and Alternative Distribution Approaches in an Expeditionary Maneuver Environment

James North • Jennifer Jebo  
Charles McCarthy, III



## Technology for the United States Navy and Marine Corps, 2000-2035

Becoming a 21st-Century Force

FOR OFFICIAL USE ONLY

## Seabased Logistics



### A 21<sup>st</sup> Century Warfighting Concept

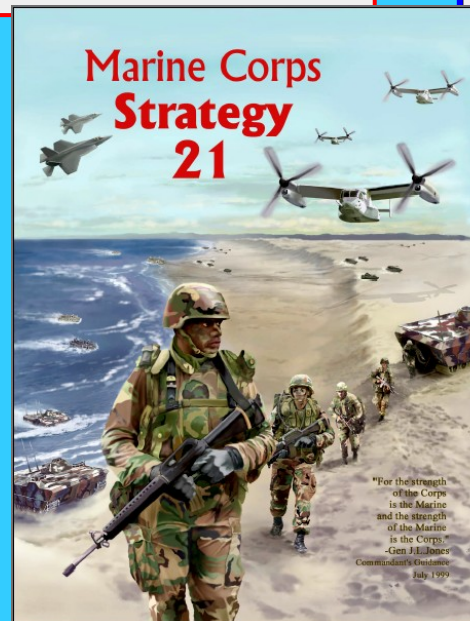
*Forward...from the Sea, and Operational Maneuver from the Sea* chart the direction for Naval Forces of the 21<sup>st</sup> Century. They collectively envision seabased power projection that employs naval maneuver, precision strike, superior situational awareness and protection, and focused sustainment. *Seabased Logistics* is a bold proposal to move toward more fully integrated operations, logistics, and information warfighting capabilities. It offers a conceptual framework, baseline operating tenets, and future operational capabilities to enable naval power projection...from the sea. *Seabased Logistics* is part of an on-going process to open debate and provide alternatives for future analysis, wargaming and experimentation.

J. E. RHODES  
Lieutenant General, U.S. Marine Corps  
Commanding General  
Marine Corps Combat Development Command

G. S. HOLDER  
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12 May 1998

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CHIEF OF NAVAL OPERATIONS'  
STRATEGIC STUDIES GROUP XIX

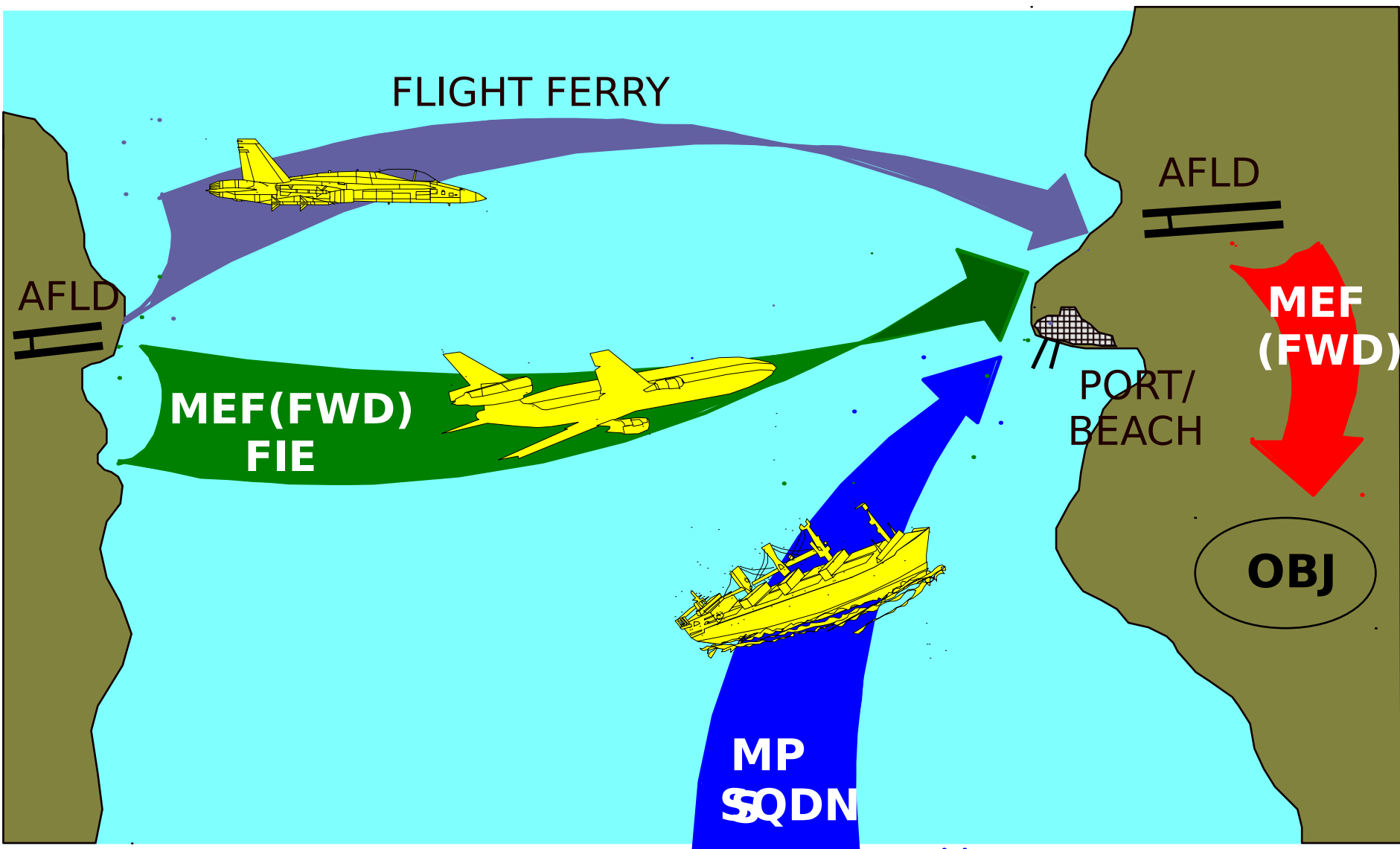


NAVAL POWER FORWARD

VOLUME VI: IN-STRIDE SUSTAINMENT

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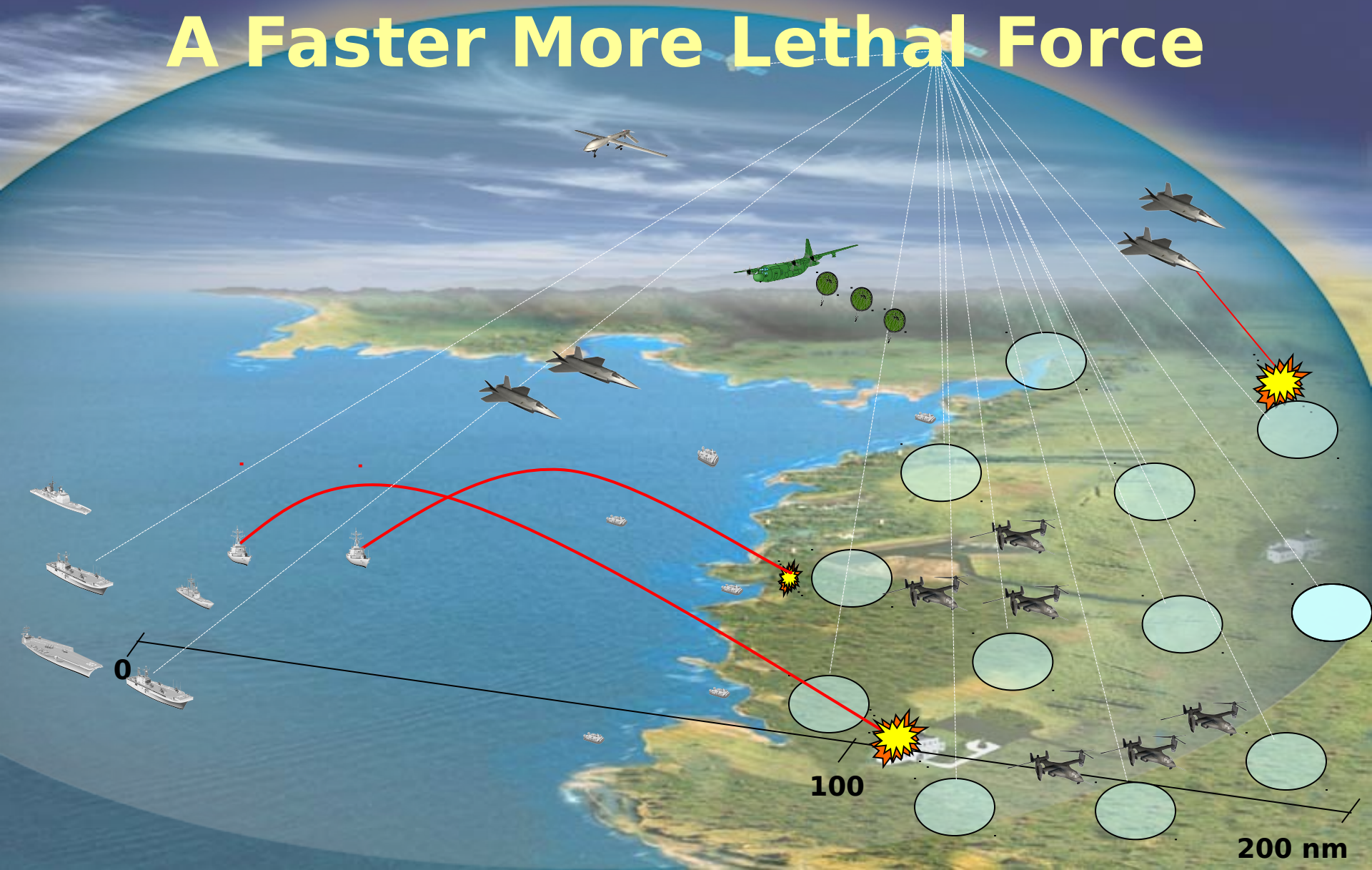
# Current MPF Concept





# Seabasing and Expeditionary Maneuver Warfare A Faster More Lethal Force

The illustration depicts a maritime force (ships) launching various aircraft (fighters, bombers, drones) and missiles against a coastal target area. The ships are labeled with distances: 0, 100, and 200 nm. The aircraft are shown in various stages of flight, with some launching missiles that are shown hitting targets on the ground. The background is a stylized globe with a blue sky and green landmasses.





# Delivering Operational Availability

## ✓ *Transform naval warfighting capability*

- **Expeditionary Strike Group** for immediate influence of large areas with distributed forces
- Seabasing for rapid Joint Forcible Entry

## ✓ *Return on investment*

- Revolutionize operational availability of forces
- Dramatically shorten response timelines
- Transformation in delivery of operational capability

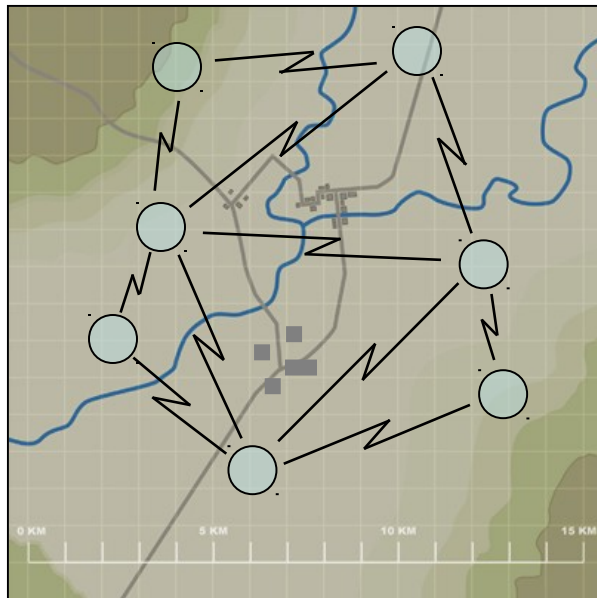
**TRANSFORMING THE WAY WE  
FIGHT**

**Fast, Flexible, Agile**

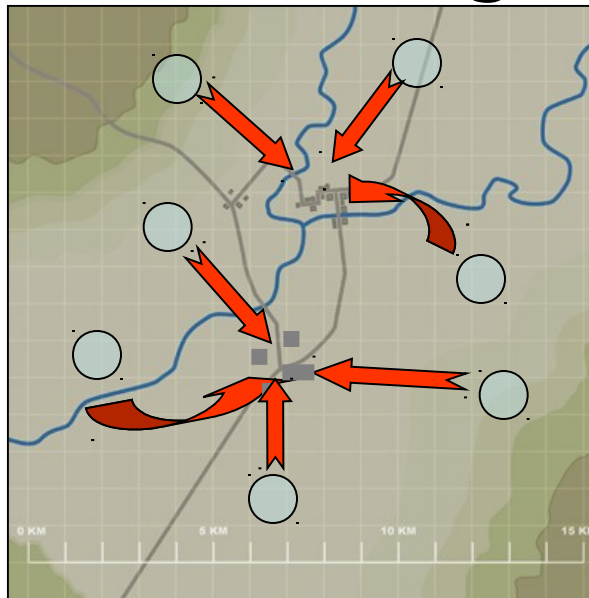
# New Capabilities ... New Way to Fight

## The Power of a Networked Force

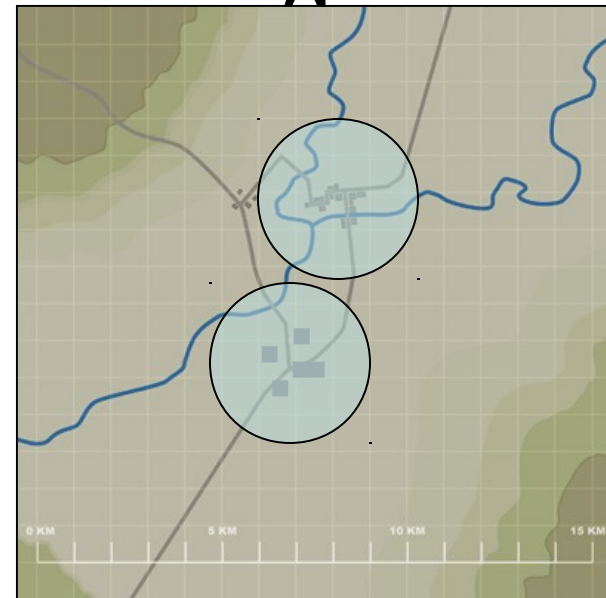
### Distributed



### Swarming



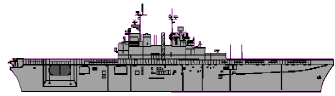
### Concentrated



- Involves a step to the right for USMC toward SOF Ops
- Meanwhile, USA takes a step to the right towards USMC type Ops

# Transition to Enhanced Capability Platforms

**Today**

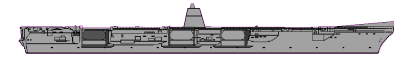


**Amphibious Assault Ship**  
~ 6 AV-8B and ~ 20 helos

FY08

LHA(R)

**Tomorrow**



**Expeditionary Strike Ship**  
~ 20+ JSF (or JSF/V-22)



**Maritime Prepositioning Squadron**

FY07



**Maritime Prepositioning Force (Future)**

\$?

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# 40 Kt EMW Program Concept



## Army-Marine Corps Board (AMCB)

11 Feb

## Analysis of Alternatives

**TSV**



**HSC**





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# Transformational Enablers



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# How to move the Engineer Iron Mountain?





# Joint Operational Engineer Board

- JCS J4 Sponsored
- Output of Focused Logistics Working Group
  - Joint Engineer Capabilities Study (JECS)
    - Vetted 22 recommendations
- Membership – Service/COCOM Engr/Log Chiefs
- Four Working Groups
  - Doctrine (MCCDC)/Training (**MCECOE**)
  - Interoperability
  - Transformation
  - Capabilities

**LPE**



# Training and Doctrine Working Group (USAF Lead)

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- Merging and updating Engineer Joint Pubs
- Create Joint Engineer Module/Curricula in Service Engineer Advanced Courses
- Review Combatant Command Engineering Directives
- Evaluate Engineer Training, Identify/Eliminate Shortfalls





# Transformation Working Group (JFCOM Lead)

- Development of Joint Engineer Concept
- Engineer Element for Joint Experimentation
- Contingency Funding Guidelines – current and future years
- Develop Process to Assess and Manage Engineer Proposals Entering Joint Capabilities Integration and Development System (JCIDS)

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# USAF Transformation





# BRAC Impacts





# Navair Transformation



# Interoperability Working Group (US Navy Lead)



- Engineer Planning and Execution Tool (Son of JEPES)
- Engineer Database in GCSS
- **Data Collection/Analysis Capability Standardize Beddown Facility Sets**
- **Cross-Service Modularization (plug and play)**

# Capabilities Working Group (US Army Lead)

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- Examine Roles and Missions
- Judicious use of PREPO and WRM
- Engineer Pre-positioned Equipment Mini-depots
- Outsourcing Technical Engineer Tasks
- Modernization of Construction Techniques, Equipment and Material
- Bridging Capabilities (COCOM Requirements analysis and ICD review ongoing)
- Define Joint Engineer Capabilities Elements

# OIF Operations



# Top 5 Most Deadly Enemy TTPs

<b>1. Small arms fire (SAF)</b>	<b>27</b>	<b>23.3</b>
<b>2. Improvised explosive device (IED) attack</b>	<b>29</b>	<b>18.2%</b>
<b>3. Hostile-ambush</b>	<b>69</b>	<b>5.2%</b>
<b>4. Hostile-vehicle borne (VBIED)</b>	<b>55</b>	<b>4.6%</b>
<b>5A. Hostile-helicopter shot down/downed</b>	<b>53</b>	<b>4.4%</b>
<b>5B. Hostile-mortar attack</b>	<b>53</b>	<b>4.4%</b>
<b>6. Hostile-rocket propelled grenade (RPG) attack</b>	<b>50</b>	<b>4.2%</b>
<b>7. Hostile-vehicle accident</b>	<b>25</b>	<b>2.1%</b>
<b>8. Hostile-helicopter crash (missile attack)</b>	<b>22</b>	<b>1.8%</b>
<b>9. Hostile- sniper fire</b>	<b>17</b>	<b>1.4%</b>
<b>10. Hostile-rocket attack</b>	<b>14</b>	<b>1.2%</b>

→ Tied

(Coalition Force (CF) Invasion through 5 OCT 04, includes all CF Casualties killed in action)

Source: <http://www.centcom.mil/CENTCOMNews> & <http://casualties.org/oif/stats.aspx>, 5 OCT 04



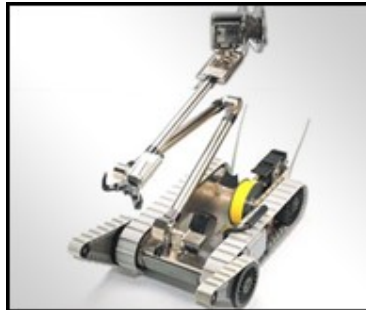
# Counter IED Efforts



- US Army IED Task Force
- USMC IED Countermeasures Working Group
- Electronic Countermeasures IPT
- Robotics IPT - \$27M funding for robots



Talon  
ICE



Packbot



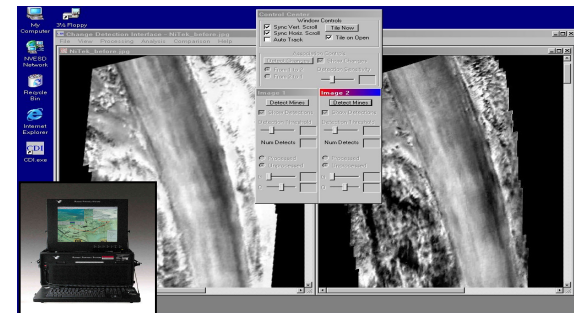
Warlock Red





# Joint EOD Counter-IED Measures

- Detect / locate emplaced IEDs
  - Change Detection Workstations
- Prevent functioning of undetected IEDs (Jammers)
- Render safe detected / located IEDs
  - Use of Robots
  - Disruption devices
  - Hand entry (most dangerous)



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# High/Low Tech Counter-IED

SMC - Acquiring Search Dogs as part of Military Dog Program

- Direct Control
- Remote Control





# Hardened Engineer Vehicle (HEV) "Cougars"

## DESCRIPTION

14 ton vehicle with V-shaped hull withstands both Anti-Personnel and Anti-Tank mine blasts.

Protection from 7.62 AP at 30 meters and airburst and side protection up to 155mm rounds.

4x4 variant can carry an EOD team, 6x6 can carry up to 12 Engineers.

NBC overpressure system, cargo spaces for chests sets and kits.

Costs: between \$350-400K apiece  
USMC - 8 deployed to AOR with 9 being built to be sent forward by 15 Feb





# Experimentation

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Carbon Fiber  
Bridging  
Alternative Fuels  
Power Sources  
Lightwt ROWPU  
Water Packaging  
System





# Composite Bridging Experimentation

- Carbon Fiber Cloth set in resin
- Resin applied via vacuum process in plastic molds
- Cured in “ovens”



# In-Field Manufacturing Methods

## Vacuum Assisted Resin Transfer Molding (V/RTM)

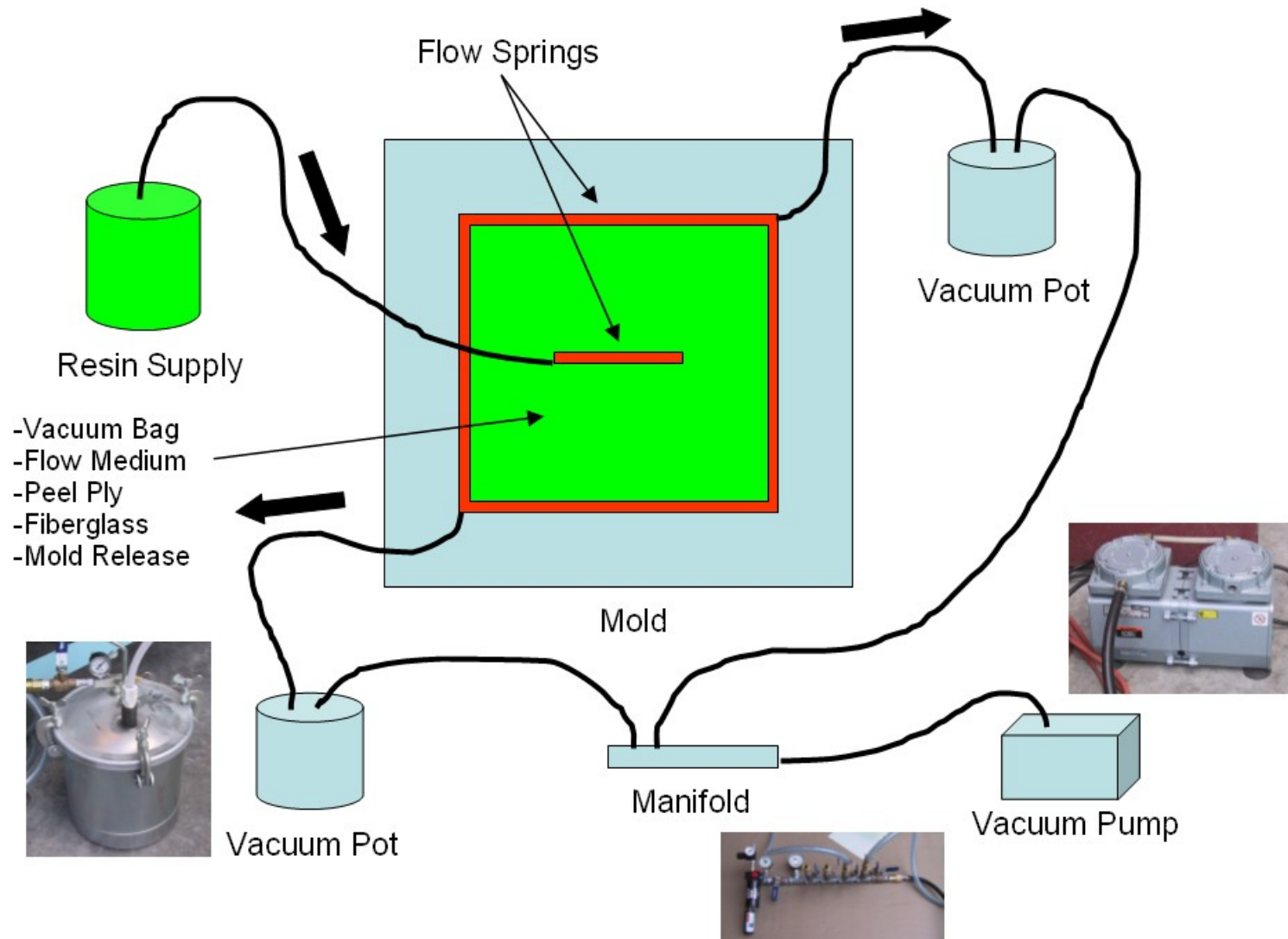


Figure 1. Resin infusion setup diagram.

# *In-Field Factory*

**In-Field Factory**  
Configurations

Design/Delivery

Analysis/Manufacturing

Assembly

## **Boeing C-17 GlobeMaster**

- Deliver 8 MEF Shelters per flight



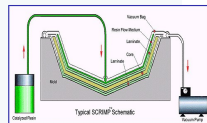
## **MEF Shelters (20' x 8' x 8')**

- Expandable into 24' x 20' Bridge Factory Floor
- Add insulation to create a cure oven (100° C)



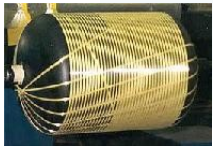
## **Assemble 8 MEF Shelters into Single or Dual-Path Factory**

Raw Material Kits,  
Tooling



Curing Oven (3)

Lay-Up and  
Infusion Area (3)

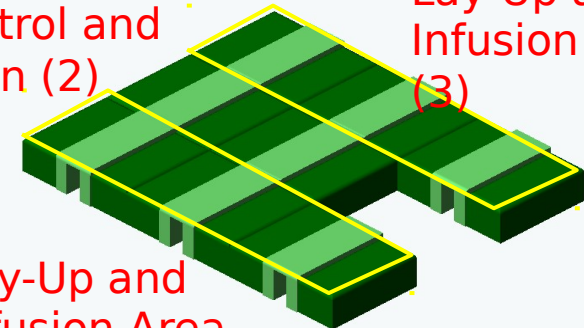


Tool Storage, Controls,  
Clean-Up or Winding Area  
(2)

Central  
Control and  
Oven (2)

Lay-Up and  
Infusion Area  
(3)

Lay-Up and  
Infusion Area  
(3)

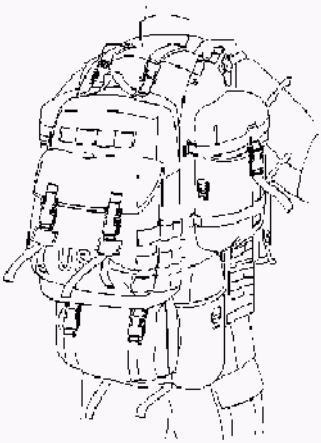




# Lightweight ROWPU



# Proposed Marine Corps Water Packaging System



AB Precision (Poole) UK

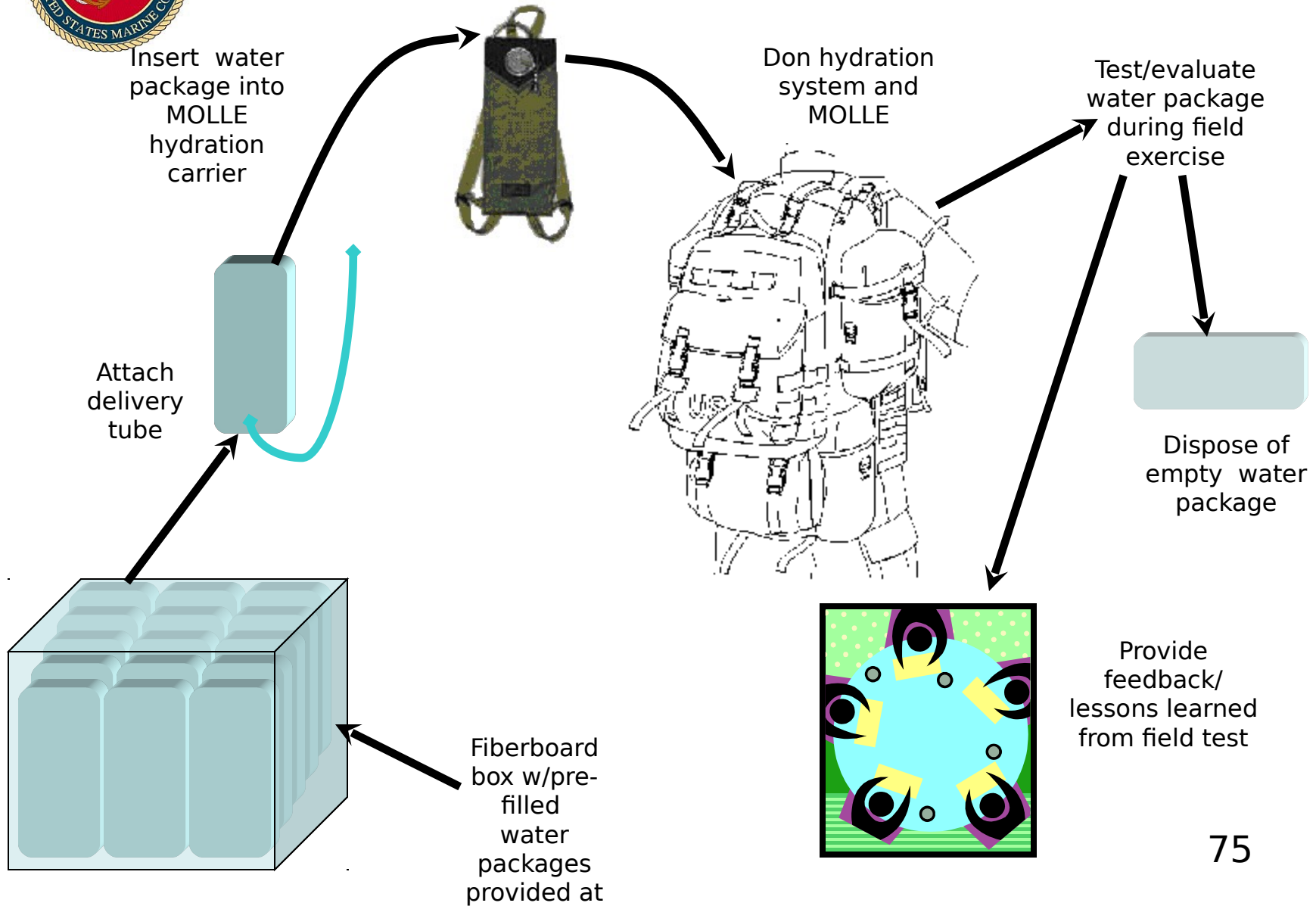
- HMMWV transportable
- Pouches
- For use with standard issue Load-carrying Equipment



AB Precision (Poole) UK

AB Precision (Poole) UK

# Proposed Water Packaging System Architecture



# **Mandate for Engineer Master Plan**





# MAGTF Engineer Capability Gaps

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- Mine Counter Measures**
- Mismatch of capabilities and core competencies. Too large a focus on construction vice mobility**
- Lack of self-mobile/readily transported equipment**
- Bridging assets incompatible with Expeditionary Maneuver Warfare.**
- Perceived redundancies between USMC and Other Services Engineers.**
- Antiquated fuel and water**

# MROC Decision Memorandum of 12 Oct



- DC, I&L take the lead And:
  - Evaluate Unit Missions, Structure and Equipment
  - Grain Consensus on Way Ahead
  - Identify Near, Mid, and Far-term programmatic measures across spectrum
    - Near-Term: FY06-11
    - Mid-Term: FY12-15
    - Far-Term: FY16-19
  - Develop Coordinating Instructions for working with other Services
  - Develop Engineer Center of Excellence Role

# Bridging ?

MAGTF Element	Bridging Type	Nomenclature		
GCE CEBs	Assault Bridging (<8m)	<b>Towed Assault Bridge (12)</b>		
		<b>Armored Vehicle Launch Bridge (AVLB) (36) (EAB Upgrade)</b>		
CSSE Engr Spt Bns	Tactical Bridging (8-120m)	<b>Medium Girder Bridge (MGB) (50)</b>		
		<b>Ribbon Bridge (9 Sets)</b>		
CSSE/Naval Engineers	Line of Communication Bridging (non-T/E)	<b>Mabey Johnson/Culvert Bridging</b>		

# Materiel Requirements?



25 Ton Crane (60" Fording Requirement,  
Costs increase by ten to ford)

<u>Equipment Type</u>	<u>Fording Capability</u>
EBFL	30"
Excavator	30"
AMC (7.5ton)	30" without kit
SEE/Backhoe	30" with no prep time
MTVR	30"
LRTF	36" without aids
TRAM	60"





- HQMC Reorganization Study
  - ACMC Sponsored (Institute for Defense Analysis (IDA) conducted)
  - Recommendations:
    - DC, CD will become DC, CD&I
      - First amongst Advocates
      - Other DC's will relinquish Integration functions
      - EFDC will move to Pentagon
  - Status:
    - DC, CD analyzing what it will take on/resources necessary to conduct new missions/functions
    - Report back by March EOS



# Expectations This Week

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- Way Ahead
  - Consensus in General Concepts for the future
    - Leap, sprint, run or jog
  - Establish a framework, Timeline, and method for follow on efforts
  - Acknowledgement of and understanding of Other Service/Joint Impacts on Engineering
    - Recommendations of how to leverage Other Service Capabilities

# Scalability



- **Scalable** -The differences in supporting future operations that vary greatly in the types of support needed due to mission and scope.
  - Example :
  - Sustained Operations Ashore (SOA) for a MEF
  - vs. STOM for a MEB
  - vs. Distributed Operations for Platoons in a MEU.
  - Providing support to each will & must be different.
  - Key: having an adaptable CSS structure that can adjust to supporting at least all three and being tied into a Common Operating Picture (COP) under a MAGTF C2.

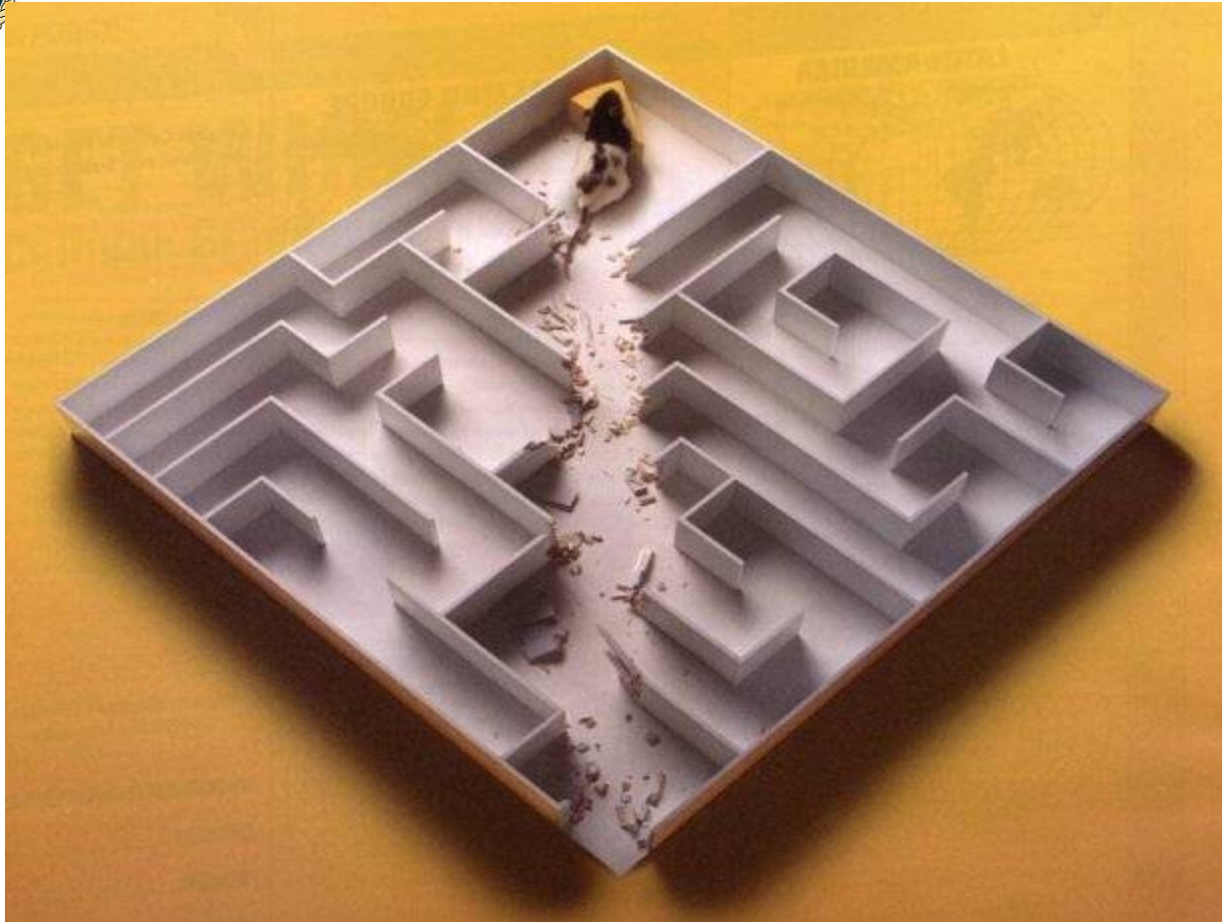


# Relevance Issues?

- There is no Service **Transformation** Plan
- You can't compartmentalize Traditional from Irregular; too much overlap
- As an expeditionary, first to fight force, be leery of interdependencies; maybe during SASO
- Focus your adjustments on how we train and manpower policies, be cautious on divesting of technologies
- EFSS does not fit; cut it
- EFV is unsupportable; we need to get out on our terms
- In our uncertain world, we need three MEF CE's; look to HQMC to downsize



# Challenges



Proceed hastily but with due deliberation



# Expectations This Week

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- Way Ahead
  - Consensus in General Concepts for the future
  - Establish a framework, Timeline, and method for follow on efforts
  - Acknowledgement and understanding of Other Service/Joint Impacts on Engineering